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ABSTRACT

This interim progress report comments on the objectives of the Media Utilization Services for Teachers (MUST) project, aimed at developing and demonstrating "a systems approach to facilitate the utilization of media to improve instruction for children, primarily those classified as educable mentally retarded (EMR) and functionally retarded." A major problem has been to identify those who are EMR. A beginning was made in establishing a method for diagnosing poor performance in academic areas, and some progress was made in using diagnostic results and identifying appropriate media to arrive at a comprehensive prescription for each child. The project acquired equipment for instructional and media presentation, and one resource teacher was trained in the use of this material. The project staff also spent some time preparing a film about the project. (JK)

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VOL. V, NO. 1 SEPTEMBER, 1971

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EVALUATION REPORT OF THE MEDIA UTILIZATION SERVICES FOR TEACHERS

(MUST)

1970-71

Atlanta Public Schools

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Vol. V, No. 1 September, 1971

EVALUATION REPORT OF THE PROJECT MEDIA UTILIZATION SERVICES FOR TEACHERS (MUST) 1970-71

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Introduction to Evaluation of Activities Ending June 15, 1971

For a period of two years, September, 1969 to June, 1971, the Media Utilization Services for Teachers (MUST) project has been working toward the objective of developing and demonstrating "a systems approach to facilitate the utilization of media to improve instruction for children, primarily those classified as EMR and functionally retarded" (3, p.14).* The project personnel characterized the task as one of developing a "systems approach to enable the schools to analyze learner needs and redesign curricula in terms of their needs." (3, p.14). They further stated, "The development of clearly defined instruction objectives, the analysis of learning tasks, the matching of appropriate media to instructional objectives will result in the development of replicable validated instructional procedures and materials" (3, p.14).

At the beginning of the school year 1970-71, the Must project staff had produced, after an eleven-month period of planning and initial implementation, a plan to establish media centers and specialized instruction for educable mentally retarded (EMR) and/or functionally retarded children in three schools, with major implementation centering at the C. W. Hill School. Equipment and limited consultant services were provided for the other two target schools, J. M. Jones and L. P. Miles. Because only equipment and occasional consultant services were provided to the latter two schools and no documentation had been made by the project staff, no attempt was made to assess the MUST activities in the schools.

It should be noted that this report is presented at a point in time that

* See Bibliography.

marks the end of the major developmental work and pilot implementation of what might be termed a "prototype program." The summer of 1971 has focused on refinement of the model and preparation for full implementation of a modified program that will undergo continuing development and modification during the 1971-72 school year.

The integral and tangential factors which have influenced the progress of the Media Utilization Services for Teachers (MUST) during the 1970-71 school year have been the major focus of the investigation. The assessment aspect has included a review of the history of the project as documented in MUST proposals and reports, interview-discussions with the personnel having the major responsibilities for directing, designing, and implementing the project, and analysis of the data collected by the project's personnel. This report includes a review of the implementation procedures, identification of problems encountered, and presentation of a limited set of data available for analysis. Evaluative comments are, in the main, of the formative type; that is, the evaluative statements are assessments about the progress attained by the preceding operational procedures. Because of the developmental nature of the project, summative evaluation is limited; but such evaluation will encompass comments concerning the extent to which particular objectives have been attained and the collection of data that provides objective support for the impact of the program.

MUST Objectives, Operations and Evaluative Comments

Objectives. The specific objectives the MUST project has set for itself have, in the course of two years, been modified. In the initial proposal for the 1971-72 school year the objectives were stated as follows (3, p.7):

1. Evaluate traditional methods for diagnosing children as EMR.
2. Establish a system and methods for diagnosing poor performance in academic areas.
3. Utilize diagnostic results and identify the appropriate media to arrive at a comprehensive prescription for each child with the ultimate goal being individualized instruction.
4. Design and modify media to aid in individualized instruction.
5. Extend the skills of resource and classroom teachers, and train teacher aides that comprise the MUST team in the three model schools in the utilization of media identified or developed.
6. Significantly improve performance in those academic areas for which individualized prescriptions have been written.
7. Analyze cost effectiveness of the MUST project and prepare a plan for extending MUST objectives into additional schools in the Atlanta School System.
8. Develop a model for national dissemination which will provide specific guidelines for implementing MUST objectives into any school.

These objectives, written in January, 1971, represented the objectives of the activities of the MUST project during the 1970-71 school year. The attainment of the objectives were, however, only partially met and, as shall be documented later, were modified in a revised proposal for the third year's operation.

Objectives 1-3. Consideration of the first three specific objectives revealed the following observations. First, the objectives were generated

by the realization, during the project's first planning year, that one major problem was that of identifying students whose ability range fell into that labeled "educable mentally retarded." Because a high percentage of children in the target schools were low achievers on the Metropolitan Achievement Test, some means of differentiating those children who definitely fell in the EMR ability range from those who were not, but had not acquired the achievement levels commensurate with their potential, needed to be identified. The latter group has been referred to as "functionally retarded" in the MUST documents. The differentiation problem was compounded by the facts that (1) the special psychological services required to determine whether or not a child qualified for a program restricted to the educable mentally retarded were not available for all the possible candidates at C. W. Hill; (2) there was some doubt concerning the validity of the testing services in making the required differentiations, particularly among children from low socio-economic homes; and (3) selection of students had to be made during the first month of the school year.

The project staff, in cooperation with the Exceptional Children Services staff, proceeded to establish a means to "find new ways of dealing with the proper identification and instruction of slow learners in large metropolitan school systems" (2, p.17). The development of a procedure to identify the children to be included in the first year's target group relied on the use of selected test scores and judgments by the teachers and principal of C. W. Hill School and the project staff. The procedure included:

(1) assignment of those children for whom intelligence test scores were available and fell within the 50-75 intelligence score range to two self-contained classrooms with special education teachers;

(2) identification of 110 students in grades two through five as the slowest learners in each grade;

(3) assignment of the identified slow learners to one of the four regular classrooms for which a MUST team teacher had the teaching responsibility;

(4) selection of the pilot sample: 20 to 32 children whose test scores on the screening tests selected by the MUST staff and personnel judgments indicated that the sample was composed of the five to eight slowest learners in each classroom.

The initial diagnostic procedure was one of testing approximately 140 children enrolled in grades two through five and classified as slow learners by the staff at C. W. Hill School. Early in the 1970-71 school year two diagnostic tests, the Houghton-Mifflin Pre-reading Inventory, Part II and the Basic Skills Checklist, constructed by the MUST staff were administered to the selected sample. The two tests made possible the evaluation of students on basic pre- and initial reading tasks. The initial data indicated great variability within each student's performance on the subtests and among the students at each grade level. The first 1970-71 quarterly report (2) reports the data by subject, grade and EMR group. The mean scores indicated an increase in ability on each of the subtests across grade level, with the EMR class obtaining scores slightly below the fourth and fifth grade groups. The distribution of scores also indicated that on many of the subtests a large percentage of children were obtaining near or almost perfect scores on each subject. The distributions tended to become constricted across the grade levels, suggesting that as basic diagnostic tool, the tests were capable of obtaining a distribution of scores that reflected the lowest levels at which the students were working at the time of testing. However, the accumulation of scores at or near perfect levels also suggested that the basic diagnostic batteries intended to serve as pre- and post-test measures for at least part of the target population, had a low ceiling and therefore, restricted the assessment of

adequate growth data for all those pupils who obtained relatively high scores on some of the subtests.

The children in the initial testing pool were separated into five groups: (1) assignment to one of two self-contained EMR classrooms (EMR I, EMR II); (2) selection for daily work of approximately one and one-half hours in the resource room (Resource Room); (3) selection for work in a Basic Skills laboratory (Basic Skills); and (4) no special attention concept for being assigned to one of the four teachers whose responsibilities included that of teaching a "regular class" and being a member of the MUST team (No Special Attention). The target population for the MUST project were those children selected for work in the Resource Room. One teacher, a special education teacher, maintained the responsibilities of implementing, testing, and assisting in the development of the procedures for teaching the selected students. Major emphasis was given to the development of reading skills. The children selected for work in the Basic Skills Laboratory were a second "target" sample. On the basis of the test scores, the children were directed by a teaching aide to the media that had been identified as means to acquire a specific objective. The set of objectives used were derived from the skills required to operate specific pieces of equipment and the abilities assessed by the pre-tests. The remaining groups had no direct contact with the MUST program. Some may have been exposed to certain procedures; however teacher-interest in the materials and methods available through the MUST work varied from no to moderate involvement and no assessment of impact on the three groups was possible.

Pre-test data by assignment and grade level are presented in Tables 1 and 2. Table 1 contains the mean score and range of scores for each group and grade level on the subtests of the Houghton-Mifflin Pre-reading Inventory, Part II.

Table 2 contains similar data for the subtests of the Basic Skills Test and when available, intelligence test scores.

TABLE 1

Pre-Test Means and Range of Scores on the Basic Skills Test

and Wechsler Intelligence Test for Children by Group and Grade Level.

Group & Grade Level	Subtests								Subtests									
	Color Name NV		Color Name V		Shape Name NV		Shape Name V		Number Identification		Number Concept		Letter Identification		Total Score		WISC Scores	
	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range
I. Resource Room																		
Grade 2 (N=6)	9.9	8-11	7.6	6-10	6.1	5-8	5.1	2-8	8.7	1,10	6.3	2,7	20.3	0-31	64.0	40-92	75.4	67-101
Grade 3 (N=6)	10.8	9-12	9.0	7-12	6.0	4-8	5.0	3-8	6.0	3-10	5.4	2-7	22.8	0-51	65.0	31-107	69.0	61-80
Grade 4 (N=5)	9.5	7-11	8.6	4-11	6.8	5-8	5.2	3-7	10.0	10	6.8	6-7	41.0	0-52	84.2	39-100	73.2	56-88
II. Basic Skills																		
Grade 2 (N=11)	10.9	10-12	10.4	9-11	6.4	3-8	5.3	3-7	8.6	4-10	5.9	2-7	21.6	0-44	69.1	37-98	104.1	104-108
Grade 3 (N=9)	10.7	8-12	9.1	8-11	6.9	6-8	6.1	5-7	9.0	4-10	6.2	4-7	24.6	0-44	73.5	43-95	97.3	65-109
Grade 4 (N=2)	11.0	10,12	9.5	9,10	8.0	8	7.0	7	10.0	10	7.0	7	48.5	48,49	101.0	98,103	106.0	106
III. No Special Treatment																		
Grade 2 (N=8)	11.0	10-12	10.1	9-11	7.5	6-8	6.2	5-8	8.8	7-10	6.9	6-7	28.8	0-45	79.2	51-99	NA*	NA
Grade 3 (N=9)	10.9	10-12	10.0	8-11	7.2	6-8	5.7	4-8	10.0	10	6.6	6-7	45.1	38-48	95.4	94-101	NA	NA
Grade 4 (N=12)	10.4	6-12	9.4	7-11	7.3	5-8	6.4	3-8	10.0	10	6.9	6-7	48.9	45-51	99.4	83-107	NA	NA
Grade 5 (N=17)	11.2	9-12	10.6	9-12	7.1	5-8	5.7	3-7	10.0	10	6.8	6-7	47.6	0-52	98.9	53-106	NA	NA
IV. EMR I (N=16)	10.5	8-11	9.5		6.8	5-8	5.0	1-7	9.9	9-10	6.1	4-7	44.9	32-52	92.9	73-105	NA	NA
V. EMR II (N=3)	11.0	10-12	10.8	9-11	7.3	7-8	6.7	6-8	10.0	10	7.0	7	49.3	48-50	101.7	99-106	NA	NA

*Data not available

TABLE 2

Pre-test Means and Range of Scores on Houghton-Mifflin Pre-reading Test by Treatment Groups and Grade Level

Group and Grade Level	Subtests									
	Using Context		Finding Letters		Listening for Letters		Matching Letters and Sounds		Total Score	
	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range
I. Resource Room										
Grade 2 (N=6)	6.5	4-8	12.5	8-16	7.3	4-11	8.7	7-11	35.0	30-43
Grade 3 (N=6)	7.0	4-8	13.7	9-18	6.5	5-14	7.8	4-17	35.0	27-56
Grade 4 (N=5)	6.4	5-8	15.6	14-18	8.8	6-14	10.8	8-16	41.6	36-55
II. Basic Skills										
Grade 2 (N=11)	7.0	3-8	14.3	13-18	6.2	6-13	8.9	4-17	36.4	26-54
Grade 3 (N=9)	6.6	3-8	14.2	9-16	6.1	6-10	7.1	6-9	34.0	27-40
Grade 4 (N=2)	7.0	6,8	18.0	18	8.5	8,9	14.5	14,15	48.0	47,49
III. No Special Treatment										
Grade 2 (N=8)	6.9	5-8	14.3	6-17	5.5	4-9	9.5	8-11	36.2	25-40
Grade 3 (N=9)	7.0	6-8	17.0	16-18	11.0	5-14	11.9	5-17	48.5	34-57
Grade 4 (N=12)	6.9	6-8	17.7	17-18	11.8	6-14	16.3	10-18	56.3	52-58
Grade 5 (N=17)	7.8	6-8	17.8	17-18	13.5	12-14	17.1	16-18	48.3	28-57
IV. EMR I (N=16)	7.4	4-8	16.6	14-18	10.4	4-14	13.9	8-18	48.3	28-57
V. EMR II (N=3)	7.0	6-8	17.0	16-18	13.0	12-14	15.3	14-17	52.3	49-57

When the children's scores are separated into subgroups, the tendencies observed in the quarterly report data do not seem to hold up as well. While the range restriction remains, there is little variation between grade level and assignment groups. The sample for whom the data was available totals 114 students, leaving approximately 36 sets of scores unaccounted for. In addition, only 17 sets of scores are available of the twenty to thirty-two students reported to have been selected for instruction in the Resource Room. Judging from the pre-test data, very little differentiation is apparent. The children receiving no special attention appear to have achieved slightly higher scores, thereby, confirming the differential selection process. The differences in means and range are not large, indicating that the selected tests did not tap higher ranges of reading ability.

The MUST staff considered further assessment, as well as selection of some control or comparison groups. The priorities, as viewed by the majority of the staff, did not include intensive assessment or monitoring of the progress of selected or control children. Individual progress of pupils attending either the Resource Room or the Basic Skills Laboratory received major attention, as the second 1970-71 quarterly report indicates. Unfortunately, overall co-ordination-documentation of scores on the pre-test and instruction as guided by the behavioral objectives were not made, nor was it possible to reconstruct the matching procedure of learner abilities and instructional objectives.

Progress, as indicated by testing procedures was again limited by several factors. Only those children assigned to the Basic Skills Laboratory or the Resource Room were post-tested. Testing in all three schools in April and May, 1971, had the primary objective of obtaining data to serve as selection information. Once the target populations for each of the three schools had been

identified, the data also served as baseline data for planning specific instructional objectives for each child to attain during the 1971-72 school year. Because the project staff decided to place major emphasis on younger children who still faced the problems of accomplishing the initial stages of learning to read, only two children in the group who received no special attention during the 1970-71 were in the spring testing group. None of the EMR classes were post-tested. Thus, no comparisons between groups could be made.

The assessment of change in the Resource Room and Basic Skills groups was made by examining the change in scores from pre- to post-testing. Because of the skewed distributions, arbitrary cut-off points were established and the frequencies of subjects falling within the intervals determined by the cut-off points at pre- and post-testing were examined. The cut-off points were set to identify the lower 25%, middle 50% and upper 25% of the total possible points. The distributions of scores by grade (2, 3, 4) and by group (Resource Room and Basic Skills) were examined. Fisher's Exact Probability Test (Seigel, 1956, p. 96-8) was used to determine whether not there was a significant change in the distributions from pre- to post-test. Tables 3-9 present the distribution of pre- and post-test scores on each of the subtests of the Basic Skills Checklist. Total score distributions are included in Table 10. Similar data for the subtests and total scores for the Houghton-Mifflin Pre-reading Inventory, Part II are found in Tables 11-15.

TABLE 3

Color Name, Nonverbal, Basic Skills Checklist:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-2	3-9	10-12	p*
2	Basic Skills	10	Pre	0	1	9	
			Post	0	0	10	.50
	Resource Room	7	Pre	0	3	4	
			Post	0	0	7	.10
3	Basic Skills	9	Pre	0	1	8	
			Post	0	0	9	.50
	Resource Room	5	Pre	0	1	4	
			Post	0	0	5	.50
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	1.00
	Resource Room	5	Pre	0	8	30	
			Post	0	0	38	N.C.**
	Total Group	38	Pre	0	8	30	
			Post	0	0	38	N.C.

* p = probability of distributions differing between pre- and post-test using Fisher's Exact Probability Test.

** N.C. = Not computed

TABLE 4

Color Name, Verbal, Basic Skills Checklist:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test time	Score Interval 0-2	3-9	10-12	p
2	Basic Skills	10	Pre	0	2	8	
			Post	0	0	10	N.C.
	Resource Room	7	Pre	0	5	2	
			Post	0	2	5	.14
3	Basic Skills	9	Pre	0	4	5	
			Post	0	1	8	.15
	Resource Room	5	Pre	0	4	1	
			Post	0	0	5	.02
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	N.C.
	Resource Room	5	Pre	0	2	3	
			Post	0	0	5	.22
	Total Group	38	Pre	0	15	21	
			Post	0	3	35	N.C.

TABLE 5

Shape Name, Nonverbal, Basic Skills Checklist:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-2	3-6	10-12	p
2	Basic Skills	10	Pre	0	5	5	
			Post	0	0	10	.02
	Resource Room	7	Pre	0	5	2	
			Post	0	1	6	.05
3	Basic Skills	9	Pre	0	5	4	
			Post	0	0	9	.02
	Resource Room	5	Pre	0	3	2	
			Post	0	0	5	.08
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	N.C.
	Resource Room	5	Pre	0	1	4	
			Post	0	0	5	.50
	Total Group	38	Pre	0	19	19	
			Post	0	1	37	N.C.

TABLE 6

Shape Name, Verbal, Basic Skills Checklist:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-2	3-6	7-8	p
2	Basic Skills	10	Pre	0	8	2	
			Post	0	2	8	.24
	Resource Room	7	Pre	1	3	3	
			Post	0	0	7	.03
3	Basic Skills	9	Pre	0	5	4	
			Post	0	0	9	.02
	Resource Room	5	Pre	0	4	1	
			Post	0	1	4	.10
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	N.C.
	Resource Room	5	Pre	0	4	1	
			Post	0	0	5	.02
	Total Group	38	Pre	1	24	13	
			Post	0	3	35	N.C.

TABLE 7

Number Identification, Basic Skills Checklist:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-2	3-7	8-10	p
2	Basic Skills	10	Pre	0	2	8	
			Post	0	0	10	.24
	Resource Room	7	Pre	1	0	6	
			Post	1	0	6	.77
3	Basic Skills	9	Pre	0	2	7	
			Post	0	2	7	.71
	Resource Room	5	Pre	1	2	2	
			Post	0	1	4	.26
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	N.C.
	Resource Room	5	Pre	0	0	5	
			Post	0	0	5	1.0
	Total Group	38	Pre	2	6	30	
			Post	1	3	34	N.C.

TABLE 8

Number Concept, Basic Skills Checklist:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-1	2-5	6-7	p
2	Basic Skills	10	Pre	0	2	8	
			Post	0	0	10	.24
	Resource Room	7	Pre	0	1	6	
			Post	0	1	6	.77
3	Basic Skills	9	Pre	0	2	7	
			Post	0	1	8	.50
	Resource Room	5	Pre	0	1	4	
			Post	0	1	4	.78
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	N.C.
	Resource Room	5	Pre	0	0	5	
			Post	0	0	5	1.0
	Total Group	38	Pre	0	6	32	
			Post	0	3	35	N.C.

TABLE 9

Letter Identification, Basic Skills Test:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-13	14-59	40-52	p
2	Basic Skills	10	Pre	3	4	3	
			Post	0	1	9	.01
	Resource Room	7	Pre	2	4	1	
			Post	0	0	7	.002
3	Basic Skills	9	Pre	2	4	3	
			Post	0	2	7	.08
	Resource Room	5	Pre	3	0	2	
			Post	0	1	4	.26
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	N.C.
	Resource Room	5	Pre	1	1	3	
			Post	0	0	5	.22
	Total Group	38	Pre	11	13	14	
			Post	0	4	34	N.C.

TABLE 10

Total Performance Score, Basic Skills Test:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval			p
				0-27	28-81	82-109	
2	Basic Skills	10	Pre	0	6	4	
			Post	0	0	10	.005
	Resource Room	7	Pre	0	5	2	
			Post	0	0	7	.01
3	Basic Skills	9	Pre	0	5	4	
			Post	0	1	8	.07
	Resource Room	5	Pre	0	3	2	
			Post	0	1	4	.26
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	N.C.
	Resource Room	5	Pre	0	1	4	
			Post	0	0	5	.50
	Total Group	38	Pre	0	20	18	
			Post	0	2	36	N.C.

TABLE 11

Using Context, Houghton-Mifflin Prereading Inventory, Part II:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-2	3-6	7-8	p
2	Basic Skills	10	Pre	0	2	8	
			Post	0	1	9	.50
	Resource Room	6*	Pre	0	2	4	
			Post	0	0	6	.28
3	Basic Skills	9	Pre	0	3	6	
			Post	0	2	7	.50
	Resource Room	6**	Pre	0	1	5	
			Post	0	0	6	.50
4	Basic Skills	2	Pre	0	1	1	
			Post	0	0	2	.50
	Resource Room	5	Pre	0	2	3	
			Post	0	1	4	.50
	Total Group	38	Pre	0	11	27	
			Post	0	4	34	N.C.

* N is 1 less than N used in Basic Skills Checklist analysis.

** N is 1 more than N used in Basic Skills Checklist analysis.

TABLE 12

Finding Letters, Houghton-Mifflin Pre-reading Inventory, Part II:

Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval			p
				0-4	5-14	15-18	
2	Basic Skills	10	Pre	0	5	5	
			Post	0	0	10	.02
	Resource Room	6	Pre	0	3	3	
			Post	0	0	6	.09
3	Basic Skills	9	Pre	0	5	4	
			Post	0	0	9	.02
	Resource Room	6	Pre	0	3	3	
			Post	0	0	6	.09
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	1.00
	Resource Room	5	Pre	0	2	3	
			Post	0	0	5	.22
	Total Group	38	Pre	0	18	20	
			Post	0	0	38	N.C.

TABLE 13

Listening for Letters, Houghton-Mifflin Pre-reading Inventory, Part II: Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-3	4-11	12-14	p
2	Basic Skills	10	Pre	3	6	1	
			Post	0	5	5	.07
	Resource Room	6	Pre	1	5	0	
			Post	0	1	5	.008
3	Basic Skills	9	Pre	0	9	0	
			Post	0	3	6	.004
	Resource Room	6	Pre	1	4	1	
			Post	1	1	4	.12
4	Basic Skills	2	Pre	0	2	0	
			Post	0	0	2	.17
	Resource Room	5	Pre	0	4	1	
			Post	0	2	3	.26
	Total Group	38	Pre	5	30	3	
			Post	1	12	20	N.C.

TABLE 14

Matching Letters and Sounds, Houghton-Mifflin Pre-reading Inventory, Part II: Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-4	5-14	15-18	p
2	Basic Skills	10	Pre	1	8	1	
			Post	0	3	7	.01
	Resource Room	6	Pre	0	6	0	
			Post	0	1	5	.008
3	Basic Skills	9	Pre	0	9	0	
			Post	0	4	5	.015
	Resource Room	6	Pre	2	3	1	
			Post	0	1	5	.04
4	Basic Skills	2	Pre	0	1	1	
			Post	0	0	2	.50
	Resource Room	5	Pre	0	4	1	
			Post	0	1	4	.10
	Total Group	38	Pre	3	31	4	
			Post	0	10	28	N.C.

TABLE 15

Total Performance Score, Houghton-Mifflin Pre-reading Inventory, Part II: Pre- and Post-test Distributions by Grade and Group.

Grade	Group	N	Test Time	Score Interval 0-15	16-43	44-48	p
2	Basic Skills	10	Pre	0	9	1	
			Post	0	1	9	.0005
	Resource Room	7	Pre	0	6	0	
			Post	0	1	5	.008
3	Basic Skills	9	Pre	0	9	0	
			Post	0	0	9	.0002
	Resource Room	6	Pre	0	5	1	
			Post	0	1	5	.04
4	Basic Skills	2	Pre	0	0	2	
			Post	0	0	2	1.00
	Resource	5	Pre	0	4	1	
			Post	0	0	5	.02
	Total Group	38	Pre	0	33	5	
			Post	0	3	35	N.C.

The probability indices should be interpreted with caution, due to the small number of subjects in each group and the fact that Fisher's Test is mainly applicable to examining the difference between independent groups. Despite these restrictions, the tables clearly indicate the skewness of the distributions obtained at pre-testing. Post-test distributions do, however, indicate that both the resource room and basic skills laboratory activities did equally well in obtaining high or maximum achievement on all of the subtests. The results are due to at least two factors. First, the tests tap initial pre-reading and number skills and therefore, were the ones for which specific instructional objectives and procedures had been developed. The fact that the Basic Skills population did equally well indicates that the project has developed a package of objectives and coordinated instructional procedures that enable a teaching aide to guide children through the initial phases of learning to read. The second factor is related to the fact that no data is available to ascertain whether or not there are differential time factors or extension of skills beyond those sampled by the two tests.

The extension of the objectives was apparent to the resource room teacher and as the pupils progressed, objectives were identified and methods emphasizing available or newly created media were developed. Explication of the extended objectives and related media-instructional procedures had not been completed at the conclusion of the school year. The project staff anticipated extending the objectives and coordinated media during the 1971 summer workshop for the teachers and aids who would be d rectly involved in the 1971-1972 program.

In summary, the examination of traditional methods for diagnosing children as EMR was given very little, if any, attention; a beginning was made in establishing a system and method for diagnosing poor performance in academic

areas; and some progress was made in utilizing diagnostic results and identifying appropriate media to arrive at a comprehensive prescription for each child. The organization of documenting assessment, prescription, and instruction was negligible. Only by reconstructing the data provided in the second quarterly report (4) and coordinating the data with the objective-instruction sheets, which were to be completed by the end of June, could any tentative assessment be made of whether or not objective three had been implemented and been found effective. One confounding factor, that of requiring 100 per cent accuracy for each objective, was present. Many children were approximating such a level on the pre-test, and, thus pre-test level, instruction, and post-test scores could not be adequately controlled for definitive analysis.

There appeared to be a limited amount of time and resources to provide for extensive or, at a minimum, adequate data collection. During the year key personnel either left the project or had their responsibilities altered. In addition, the project's several objectives demanded attention. However, it does appear that a minimum amount of organization is required to coordinate pre-test scores instruction, and post-test scores. The project's 1971 spring testing procedure included tests of more complex reading skills, thereby establishing a better data base for assessing progress during the 1971-72 year. The progress, as it relates to matching objectives and instruction, should be examined in terms of beginning level (pre-test), acquisition time of objectives, and post-test level. This analysis would be possible if teachers and aides could be provided with some means of efficiently checking objective selection and time expenditure. In addition, progress using resource rooms, basic skills laboratories, and self-contained EMR instruction requires comparison with each other and with a selected control group. No provision has been made for this type of monitoring of progress;

however, it does seem that such data is necessary if continued dissemination is planned by the system. The efforts thus far expended in development certainly warrant the empirical test, which should also lead to empirical support.

Objective 4

Media design and modification. At the time of assessment for this report, the MUST project had acquired equipment for instructional and media preparation purposes. Considerable time was spent reviewing instructional materials already available, a shift made by the staff once the project was underway and the emphasis was placed on the acquisition of reading skills. Instructional materials were identified, purchased, and modified, when needed, to fit individualized instruction requirements. In addition, media specialists produced new instructional materials and a media preparation room was being established at C. W. Hill School (see 5, Appendix, for detailed listing of equipment acquisitions). While some emphasis was placed on developing and identifying a variety of types of media to promote attainment of instructional objectives, the coordiation of media, or instructional materials, with extended objectives beyond those documented in the second quarterly report (4) was not carried out in complete detail. The plans for the project included compilation of the developed objectives and instructional procedures and extension of the objectives and coordinated instruction. This task was to be a part of the 1971 summer workshop. The data presented in the previous section suggest individualized instruction for the basic reading skills has been identified and proven effective. The objective-instruction sheet (See 4, p.20) appears to have proven its worth, particularly in the Basic Skills Laboratory. Updating, extension, and evaluation of specific instructional materials have been slow in development, the reason being limited time, the pressure to plan for the 1971-72 year and the need to attend to other responsibilities.

Objective 5

Extension of skills resource and classroom teachers, and teaching aides comprising the MUST team in the three schools in the utilization of media identified or developed. During the 1970-71 school year only one resource room teacher was involved in the project and was an individual who assisted in the implementation and development of instructional objectives and procedures. Her skills were extended to the extent that provision of a well-equipped media-resource room made it possible to expand her repetoire of instructional procedures and to work with more students than would have been possible with a self-contained EMR classroom. Aides have been trained to assist in the resource room and to manage the Basic Skills Laboratory. The contact with classroom teachers was informal, and usually at the initiative of the classroom teachers. Thus, development of skills of classroom teachers varied and no assessment was possible. At this point in time, it appears that extension of classroom teacher skills will depend on the successful inplementation of the media centers with resource room and basic skills, planned time for contacts between MUST team members, and, perhaps, MUST packaging of the objectives and materials thus far developed. It should be noted that the most recent proposal for 1971-1972 includes the assumption "Regular classroom teachers working cooperatively with the Resource Room Teachers and the MUST staff, can develop media based instructional programs which will permit EMR and functionally retarded pupils to spend a major portion of the school day in the regular classroom" (5, p.2). Actual planning for developing cooperation and skill extension has been implied in statements concerning inservice programs (5).

Objectives 6, 7 and 8. No statement concerning "Significant improvement of performance in those academic areas for which individual prescriptions

have been written" may be made since only the basic reading skills were tested and for which individual prescriptions were possible (or documented). The students did gain, but no test was made to determine whether or not the prescriptive procedure was more effective than other procedures, nor was ability level and instruction compared with end-of-year achievement. Cost analysis (Objective 7) was ignored as was development of a model for national dissemination (Objective 8). However, dissemination did consume a considerable part of the staff's time. A review of the listing of activities (5, p.4-6) indicates that, in addition to the inservice work required by the project, workshops and/or presentations were prepared for other groups. Dissemination activities included approximately eight to twelve such presentations and time spent with visitors to the project. Time was spent preparing a film that covered the work undertaken by the project. The staff developed the film for the spring on-site visit by the funding evaluation team. The MUST staff expressed the belief that the film will greatly reduce the preparation time that had been expended during the past year for dissemination. The goals of local and national dissemination were, and, at the present time, are ones that should hold low priority. Low priority should be maintained until the tasks of assessment, identified instructional objectives, and media development have been coordinated, tested, and packaged.

Final Summary

The preceding discussion of the MUST project reviewed the project's activities and accomplishments in terms of the January, 1971, objectives. The goals, tasks, and products of the project altered as implementation progressed. In the most recent proposal, the 1970-72 activities were

described as "decentralized management into five areas: (1) implementation of program at C. W. Hill School; (2) planning for future MUST involvement at J. M. Jones and L. P. Miles School; (3) development of a Basic Skills Laboratory Plan; (4) evaluation and research design; and (5) production of media" (5, p.2). Each of these activities has been reviewed from a slightly different framework.

The development of a media center that may be utilized by all teachers within a school or system area is, it appears, a major underlying goal of the project. Demonstrating effective use in the area of beginning reading skills is the "proof" that such centers are important for all areas of instruction, provided one has the knowledge and skills to match multi-media based instruction with specific objectives. The dependence between development, demonstration, and dissemination are somewhat sequential, and it appears that the first two require higher priority than the third. The products of the project, i.e. a set or series of instructional objectives coordinated with a variety of media-based instructional sequences, need to be "packaged" and tested via demonstration. The 1971-72 plans cover this aspect; however the documentation of the implementation process demands analysis for dissemination purposes. Documentation not only refers to improved data collection, but also to the systematic reporting of the advancement of objectives, development of (or identified) materials, and degree of utilization of the purchased produced materials and equipment. The degree to which the project staff view the importance of documentation remains ambiguous.

Finally, the "systems approach" has only been partially developed in operation. Again, the elements and some of the linkages have been developed and are operating. However, the expenditure of staff time on the components

of the system have tended to be imbalanced when compared with the priorities assigned to the different goals. This imbalance may reflect a condition of development and not be a factor in the 1971-72 activities. It is clear that the "systems approach" applies to personnel as well as program planning-implementation. Clear responsibilities as well as coordinated development of activities and policy-making are required to achieve a working system.

In terms of the complex developmental tasks MUST has had to undertake, the progress made is considerable. The documentation has been less than desirable for optimum formative or sumative evaluation: a condition that has been and can be corrected during the third year's implementation. In fact, it is the 1971-72 activities that are the most appropriate for objective evaluation.

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